

1 **ABSTRACT**

2       Methods and systems for animating facial features and transforming facial  
3 expressions are described. In one embodiment, a code book contains data that  
4 defines a set of facial expressions of a first person. A training set of facial  
5 expressions from a second person and corresponding expressions from the code  
6 book are used to derive a transformation function that is then applied to all of the  
7 expressions of the code book. In this manner, expressions from the first person  
8 can be realistically transformed into expressions of a second person and vice  
9 versa. Particularly advantageous aspects of the described embodiments provide a  
10 single common generic face model that is used as the basis for a fitting operation  
11 for many different faces. Use of the single common generic face model and  
12 certain user-defined constraints provide a mechanism by which correspondences  
13 between the different faces can be established. These correspondences provide a  
14 basis for facial animation operations, among which are included expression  
15 transformation.

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